Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A semiconductor wafer holding system for holding wafers in position within a transfer chamber during transfer of the wafers between an ambient atmosphere and an inspection chamber which is at vacuum pressure, comprising:

a transfer chamber interposed between the ambient atmosphere and the inspection chamber and subjected to alternating depressurization and repressurization;

at least one paddle fixedly arranged in said transfer chamber, and having a wafer-receiving surface with openings therein adapted to be covered by a wafer; and

drawing means for drawing the wafer to said wafer-receiving surface of said at least one paddle to thereby inhibit motion of the wafer in said transfer chamber during at least one of the alternating depressurization and repressurization, wherein said drawing means are arranged to provide a pressure at said openings which is lower than pressure prevailing in said transfer chamber.

2. (Canceled).

3. (Currently amended) The system of claim [[2]] 1, wherein said drawing means comprise a vacuum source or pump, and conduit means for providing flow communication between said vacuum source or pump and said openings to create suction thereat.

4. (Original) The system of claim 3, wherein said drawing means further comprise valve means operatively arranged with said conduit means for opening and closing the flow communication between said vacuum source or pump and said openings.

5. (Original) The system of claim 4, wherein said conduit means comprise a respective conduit leading to each of said at least one paddle, and said valve means comprise a respective valve operatively arranged with each said conduit.

6. (Original) The system of claim 5, wherein said valve means includes a flow connection to an interior of said transfer chamber to controllably communicate said openings with the interior of said transfer chamber.

7. (Original) The system of claim 5, wherein said drawing means further comprise paddle conduits arranged in each of said at least one paddle in flow communication with said openings in said paddle.

8. (Original) The system of claim 1, wherein said at least one paddle comprises two paddles.

9. (Original) The system of claim 8, wherein said drawing means comprise a vacuum source or pump, paddle conduits arranged in each of said paddles, first and second branch conduits each arranged between said vacuum source or pump and said paddle conduits in a respective one of said first and second paddles, and first and second valves operatively arranged

with a respective one of said first and second branch conduits for opening and closing flow communication between said vacuum source or pump and said openings in the respective one of said first and second paddles.

10. (Withdrawn) The system of claim 1, further comprising laminar flow means for introducing a laminar flow of gas into said transfer chamber to repressurize said transfer chamber.

11. (Withdrawn) The system of claim 10, wherein said laminar flow means comprise a diffuser arranged in said transfer chamber and having at least one opening through which the gas is introduced into said transfer chamber.

12. (Previously presented) The system of claim 1, further comprising valves for sealing said transfer chamber from the ambient atmosphere and the inspection chamber during the alternating depressurization and repressurization of said transfer chamber.

13. (Currently amended) A semiconductor wafer holding system for holding wafers in position during transfer of the wafers between ambient atmosphere and an inspection chamber which is at vacuum pressure, comprising:

a transfer chamber interposed between the ambient atmosphere and the inspection chamber and subjected to alternating depressurization and repressurization;

a paddle fixedly arranged in said transfer chamber, and having a wafer-receiving surface with openings therein adapted to be covered by a wafer;

a vacuum source or pump;

a conduit coupling said vacuum source or pump in flow communication with said openings; and

at least one valve means operatively arranged in said conduit for controlling said flow communication during at least one of the alternating depressurization and repressurization so that when the pressure at said openings is less than the pressure prevailing in said transfer chamber, the wafer is drawn to said wafer-receiving surface of the paddle to thereby inhibit motion of the wafer in said transfer chamber.

14. (Previously presented) The system of claim 13, wherein said at least one valve means includes a flow connection to an interior of said transfer chamber to controllably communicate said openings in the paddle with the interior of said transfer chamber.

15. (Original) The system of claim 13, wherein said conduit comprises a paddle conduit arranged in said paddle in flow communication with said openings in said paddle.

16. (Withdrawn) The system of claim 13, further comprising a diffuser arranged in said chamber and having at least one opening through which a laminar flow of gas is introduced into said transfer chamber to repressurize said transfer chamber.

17. (Previously presented) A method for inhibiting motion of a semiconductor wafer in a transfer chamber subjected to alternating depressurization and repressurization, comprising:

fixing a paddle in the transfer chamber, the paddle having a wafer-receiving surface with openings therein;

placing the wafer on the wafer-receiving surface of the paddle, and over the openings;

coupling the openings in flow communication with a vacuum source or pump; and

controlling the flow communication between the vacuum source or pump and the openings during at least one of the alternating depressurization and repressurization of the transfer chamber to cause the wafer to be drawn to the wafer-receiving surface of the paddle by a vacuum force and thereby inhibit motion of the wafer in the transfer chamber.

18. (Original) The method of claim 17, wherein the step of coupling the openings to a vacuum source or pump comprises providing a conduit between the vacuum source or pump and the openings, and said control of flow communication between the vacuum source or pump and the openings comprises operatively arranging a valve with the conduit.

19. (Original) The method of claim 17, further comprising closing the flow communication between the vacuum source or pump and the openings when the pressure in the depressurized transfer chamber rises to near atmospheric pressure.

20. (Withdrawn) The method of claim 17, further comprising introducing a laminar flow of gas into the transfer chamber during repressurization of the transfer chamber.

21. (Withdrawn) The method of claim 20, wherein the step of introducing gas into the transfer chamber comprises arranging a diffuser in the transfer chamber and providing the diffuser with at least one opening through which the gas is introduced into the transfer chamber.

22. (Original) A method for transferring semiconductor wafers between ambient atmosphere and an inspection chamber, maintained at a vacuum pressure, through a transfer chamber, comprising:

transferring a wafer from the ambient atmosphere through a first gate valve onto a paddle in the transfer chamber while the transfer chamber is isolated from the inspection chamber by a closed second gate valve;

closing the first gate valve to isolate the transfer chamber from the ambient atmosphere after the first wafer has been placed onto the paddle;

depressurizing the transfer chamber until the pressure in the transfer chamber is near the pressure in the inspection chamber, and then opening the second gate valve;

transferring the wafer from the transfer chamber to the inspection chamber after the second gate valve is open;

inspecting the wafer and then returning the inspected wafer to the paddle in the depressurized transfer chamber;

closing the second gate valve and, while the second gate valve is closed, repressurizing the transfer chamber;

providing the paddle with a wafer-receiving surface having openings therein, the wafer being placed on the paddle and over the openings therein;

coupling the openings in flow communication with a vacuum source or pump; and

controlling the flow communication between the vacuum source or pump and the openings during at least one of the depressurization and repressurization of the transfer chamber to cause the wafer to be drawn to the wafer-receiving surface of the paddle by suction and thereby inhibit motion of the wafer during said at least one of the depressurization and repressurization of the transfer chamber.

23. (Original) The method of claim 22, wherein said coupling of the openings to a vacuum source or pump comprises providing a conduit between the vacuum source or pump, and the step of controlling flow communication between the vacuum source or pump and the openings comprises operatively arranging a valve with the conduit.

24. (Original) The method of claim 22, further comprising the step of stopping the flow communication between the vacuum source or pump and the openings when the pressure in the depressurized transfer chamber rises to near atmospheric pressure.

25. (Original) The method of claim 24, further comprising the step of enabling flow communication between an interior of the transfer chamber and the openings as the flow communication between the vacuum source or pump and the openings is stopped.

26. (Original) The method of claim 22, wherein the step of repressurizing the transfer chamber comprises the step of introducing a laminar flow of gas into the transfer chamber.

27. (Original) A method for transferring semiconductor wafers between ambient atmosphere and an inspection chamber, maintained at a vacuum pressure, through a transfer chamber, comprising:

transferring a first wafer from the ambient atmosphere through a first gate valve onto a first paddle in the transfer chamber while the transfer chamber is isolated from the inspection chamber by a closed second gate valve;

closing the first gate valve to isolate the transfer chamber from the ambient atmosphere after the first wafer has been placed onto the paddle;

depressurizing the transfer chamber until the pressure in the transfer chamber is near the pressure in the inspection chamber, and then opening the second gate valve;

transferring the first wafer from the transfer chamber to the inspection chamber after the second gate valve is open;

closing the second gate valve and, while the second gate valve is closed, placing the first wafer onto a measurement site in the inspection chamber, repressurizing the transfer chamber, opening the first gate valve, placing a second wafer onto a second paddle in the transfer chamber, closing the first gate valve and depressurizing the transfer chamber;

opening the second gate valve and, while the second gate valve is open, transferring the first wafer from the inspection chamber onto the first paddle in the transfer chamber, and transferring the second wafer from the transfer chamber to the inspection chamber;

closing the second gate valve and, while the second gate valve is closed, placing the second wafer onto a measurement site in the inspection chamber, repressurizing the transfer chamber, opening the first gate valve, placing a third wafer onto the first paddle in the transfer chamber, closing the first gate valve and depressurizing the transfer chamber;

providing the first and second paddles with a wafer-receiving surface having openings therein, the wafers being placed on the first and second paddles, and over the openings;

coupling the openings in flow communication with a vacuum source or pump; and

controlling the flow communication between the vacuum source or pump and the openings during at least one of the depressurization and repressurization of the transfer chamber to cause the wafer to be drawn to the wafer-receiving surface of the paddle by suction and thereby inhibit motion of the wafer during said at least one of the depressurization and repressurization of the transfer chamber.

28. (Original) The method of claim 27, wherein said coupling of the openings to a vacuum source or pump comprises providing a conduit between the vacuum source or pump, and the step of controlling flow communication between the vacuum source or pump and the openings comprises operatively arranging a valve with the conduit.

29. (Original) The method of claim 27, further comprising the step of stopping the flow communication between the vacuum source or pump and the openings when the pressure in the depressurized transfer chamber rises to near atmospheric pressure.

30. (Original) The method of claim 29, further comprising the step of enabling flow communication between an interior of the transfer chamber and the openings as the flow communication between the vacuum source or pump and the openings is stopped.

31. (Original) The method of claim 27, wherein the step of depressurizing the transfer chamber comprises the steps of opening a roughing valve operatively associated with the transfer chamber for depressurizing the chamber, measuring the pressure in the transfer chamber during depressurization and, when the measured pressure approaches 10E-3 Torr, closing the roughing valve and opening a turbo molecular vacuum pump to depressurize the transfer chamber to a pressure of about 10E-6 Torr.

32. (Original) The method of claim 31, further comprising the steps of:

enabling flow communication between the vacuum source or pump and the openings until the pressure in the depressurized transfer chamber rises to near atmospheric pressure; and then

enabling flow communication between an interior of the transfer chamber and the openings.

33. (Original) The method of claim 27, wherein the step of repressurizing the transfer chamber comprises the step of introducing a laminar flow of gas into the transfer chamber.

34. (Original) The method of claim 33, wherein the step of introducing gas into the transfer chamber comprises the steps of operatively arranging a diffuser in the transfer chamber, and providing the diffuser with at least one opening through which the gas is introduced into the transfer chamber.

35. (Withdrawn) A semiconductor wafer holding system for holding wafers in a transfer chamber during transfer of the wafers between ambient atmosphere and an inspection chamber which is at vacuum pressure, comprising:

a transfer chamber interposed between the ambient atmosphere and the inspection chamber and subjected to alternating depressurization and repressurization;

a paddle arranged in said transfer chamber, said paddle having a wafer-receiving surface; and

laminar flow means for introducing a laminar flow of gas into said transfer chamber to repressurize said transfer chamber to thereby inhibit motion of any wafers during repressurization.

36. (Withdrawn) The system of claim 30, wherein said laminar flow means comprise a diffuser operatively arranged in said transfer chamber and having at least one opening through which the gas is introduced into said transfer chamber.

37. (Withdrawn) The system of claim 36, further comprising a source of gas, a conduit leading from said gas source to said diffuser and a valve operatively arranged with said conduit for regulating flow of gas from said gas source to said diffuser.

38. (Withdrawn) The system of claim 36, wherein said at least one opening in the diffuser is positioned above the paddle.

39. (Withdrawn) The system of claim 38, wherein said at least one opening in the diffuser is directed to create flow transversely within the transfer chamber.

40. (Withdrawn) The system of claim 39, wherein said at least one opening in the diffuser is positioned adjacent a wall of the transfer chamber.

41. (Withdrawn) The system of claim 40, wherein said at least one opening in the diffuser is positioned in a corner of the transfer chamber.

42. (Withdrawn) The system of claim 41, wherein said wafer-receiving surface of said paddle has openings adapted to be covered by the wafer, the system further comprising drawing means for drawing wafers to said wafer-receiving surface of said paddle by providing pressure at said openings which is lower than the pressure prevailing in said transfer chamber to thereby inhibit motion of any of the wafers in said transfer chamber.

43. (Withdrawn) The system of claim 42, further comprising a second paddle, and drawing means for drawing wafers to said wafer-receiving surface of said paddles to thereby inhibit motion of the wafer in said transfer chamber, said drawing means comprising a vacuum source or pump, first and second branch conduits each arranged between said vacuum source or pump and said paddle conduits in a respective one of said first and second paddles, and first and second valves operatively arranged with a respective one of said first and second branch conduits for opening and closing the flow communication between said vacuum source or pump and said openings in the respective one of said first and second paddles.

44. (Withdrawn) The system of claim 36, wherein said at least one opening in the diffuser is directed to create flow transversely within the transfer chamber.

45. (Withdrawn) The system of claim 36, wherein said at least one opening in the diffuser is positioned adjacent a wall of the transfer chamber.

46. (Withdrawn) The system of claim 36, wherein said at least one opening in the diffuser is positioned in a corner of the transfer chamber.

47. (Withdrawn) A method for inhibiting motion of a semiconductor wafer in a transfer chamber during repressurization of the transfer chamber, comprising the steps of:

arranging a paddle in the transfer chamber;

placing the wafer on a wafer-receiving surface of the paddle; and

introducing a laminar flow of gas into the transfer chamber during repressurization of the transfer chamber to thereby inhibit motion of the wafer during repressurization of said transfer chamber.

48. (Withdrawn) The method of claim 47, wherein the step of introducing gas into the transfer chamber comprises the steps of arranging a diffuser in connection with the transfer chamber and providing the diffuser with openings through which the gas is introduced into the transfer chamber.

49. (Withdrawn) The method of claim 47, further comprising the steps of:

arranging openings in the wafer-receiving surface of the paddle, the wafer being placed on the wafer-receiving surface of the paddle over the openings;

coupling the openings to a vacuum source or pump; and

selectively enabling flow communication between the vacuum source or pump and the openings during repressurization to cause the wafer to be drawn to the wafer-receiving surface of the paddle by suction.

50. (Withdrawn) The method of claim 49, wherein the step of coupling the openings to a vacuum source or pump comprises the step of providing a conduit between the vacuum source or pump, and the step of selectively enabling flow communication between the vacuum source or pump comprises the step of arranging a valve in connection with the conduit.

51. (Withdrawn) The method of claim 49, wherein flow communication between the vacuum source or pump and the openings is enabled upon the introduction of the gas into the transfer chamber.

52. (Withdrawn) A method for inspecting semiconductor wafers in an inspection chamber maintained at a vacuum pressure, comprising the steps of:

transferring a first wafer from the ambient atmosphere through a first gate valve onto a first paddle in a transfer chamber while the transfer chamber is isolated from the inspection chamber by a closed second gate valve;

closing the first gate valve to isolate the transfer chamber from the ambient atmosphere after the first wafer has been placed onto the paddle;

depressurizing the transfer chamber until the pressure in the transfer chamber is near the pressure in the inspection chamber and then opening the second gate valve;

removing the first wafer from the transfer chamber when the second gate valve is open;

closing the second gate valve and, while the second gate valve is closed, placing the first wafer onto a measurement site in the inspection chamber, repressurizing the transfer chamber, opening the first gate valve, placing a second wafer onto a second paddle in the transfer chamber, closing the first gate valve and depressurizing the transfer chamber;

opening the second gate valve and while the second gate valve is open, transferring the first wafer from the inspection chamber onto the first paddle in the transfer chamber and removing the second wafer from the transfer chamber; and

closing the second gate valve and, while the second gate valve is closed, placing the second wafer onto a measurement site in the inspection chamber, repressurizing the transfer chamber, opening the first gate valve, placing a third wafer onto the first paddle in the transfer chamber, closing the first gate valve and depressurizing the transfer chamber;

the step of repressurizing the transfer chamber comprising the step of introducing gas into the transfer chamber while creating a laminar flow in the transfer chamber.

53. (Withdrawn) The method of claim 52, wherein the step of introducing gas into the transfer chamber comprises the steps of arranging a diffuser in connection with the transfer chamber and providing the diffuser with openings through which the gas is introduced into the transfer chamber.

54. (Withdrawn) The method of claim 52, further comprising the steps of:

providing the first and second paddles with a wafer-receiving surface having openings therein, the wafers being placed on the first and second paddles over the openings;

connecting the openings to a vacuum source or pump; and

selectively enabling flow communication between the vacuum source or pump and the openings during at least one of the depressurization and repressurization of the transfer chamber to cause the wafer to be drawn to the wafer-receiving surface of the paddle by suction and thereby inhibit motion of the wafer during said at least one of the depressurization and repressurization of the transfer chamber.

55. (Withdrawn) The method of claim 54, wherein the step of connecting the openings to a vacuum source or pump comprises the step of providing a conduit between the vacuum source or pump, and the step of selectively enabling flow communication between the vacuum source or pump comprises the step of arranging a valve in connection with the conduit.

56. (Withdrawn) The method of claim 54, further comprising the step of stopping the flow communication between the vacuum source or pump and the openings when the pressure in the depressurized transfer chamber rises to near atmospheric pressure.

57. (Withdrawn) The method of claim 56, further comprising the step of enabling flow communication between an interior of the transfer chamber and the openings after the flow communication between the vacuum source or pump and the openings is closed.